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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LUU, MATTHEW	

ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,842	SEILER ET AL.	
	Examiner	Art Unit	
	LUU MATTHEW	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *July 14 and 25, 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Jouppi et al (6,204,859).

Claim 9.

Jouppi discloses (Figs. 4 and 5) a method for determining the appearance of a pixel (300), comprising:

receiving fragment data (301, 302 and 400) for a pixel (300) to be rendered;

storing the fragment data in the pixel memory (314); and

determining an appearance value for the pixel based on the stored fragment data, wherein (Fig. 5C) at least one of the stored fragment data (310) is dropped when the number of fragment data per pixel exceeds a threshold value (N=2). Fig. 5C shows the fragment triple data (410) replaces the fragment triple data (310). See column 7, lines 37-67; column 8, lines 21-28; and column 9, lines 26-37.

Claim 10.

Jouppi further teaches dropping the fragment data with a no color designation (completely transparency) (Column 15, lines 28-33).

Claim 11.

Jouppi further discloses (Fig. 6D) the threshold value is N=3 (310, 312 and 410).

Claim 12.

Jouppi discloses (Fig. 5C) at least one of the stored fragment data (310) is dropped when the number of fragment data per pixel exceeds a threshold value (N=2). Fig. 5C shows the fragment triple data (410) replaces the fragment triple data (310). Jouppi further teaches dropping the fragment data having the least effect on pixel appearance (replacing the fragment data, which has the smallest color difference) (Column 9, line 65 to column 10, line 6).

Claim 13.

Jouppi discloses (Fig. 6C) the masked sample data (620, 622 and 624) is used to determine the appearance value for the pixel (300) (Column 13, lines 23-44).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US 2003/0030642) in view of Everitt et al (US 2004/0169651).

Claim 1.

Chen discloses (Figs. 1 and 2) a graphics processor, comprising:

a rasterizer (rasterizer chip 16) operative to generate fragment data for a pixel to be rendered in response to primitive information (Page 1, section 16, lines 3-7);

a pixel appearance determination circuit (Fig. 2, memory chip 10 having a logic core 50), coupled to the rasterizer (16), for determining which bits are least important to the texture representation and eliminated those bits (Page 3, section 25, lines 9-11).

Chen fails to disclose the dropping the fragment data having the least effect on pixel appearance.

However, Everitt discloses (Figs. 1 and 4) a graphics processor having a rasterization pipeline (400) for determining a pixel appearance value (depth value) based on the fragment data by dropping the fragment data having the least effect on pixel appearance (if the depth values are outside the depth bounds, then the pixel or pixels in the fragment do not need to be rendered and can be discarded) (Page 4, section 32 and 35).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the depth bounds test of Everitt into the graphics processor of Chen to reduce the amount of time spent rendering shadow volumes and decreases the memory bandwidth consumed by writing to the stencil buffer (as suggested by Everitt, page 1, section 7, lines 1-6).

Claim 2.

Chen further discloses (Fig. 2) the determination circuit is a combined memory and logic chip for storing the fragment data (Page 1, section 8; and page 2, section 19, lines 1-11; and section 22, lines 1-8).

Claim 5.

Chen discloses (Fig. 1) a setup unit (a geometry chip 14) operative to generate the primitive information in response to vertex information (Page 1, section 16, lines 1-7).

Claim 8.

Everitt further discloses (Fig. 4) a stencil test unit (425) masks all or a portion of the fragment from rendering according to a stencil value stored in the stencil buffer (455) (Page 5, section 42).

Claim Rejections - 35 USC § 103

Claims 3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Everitt as applied to claim1 above, and further in view of Jouppi et al (6,204,859).

Claims 3 and 7.

Chen fails to teach dropping one of the fragment data when the fragment data exceeds a predetermined value N.

However, Jouppi discloses (Fig. 5C) the determination of an appearance value for the pixel based on the stored fragment data, wherein at least one of the stored fragment data (310) is dropped when the number of fragment data per pixel exceeds a threshold value (N=2). Fig. 5C shows the fragment triple data (410) replaces the fragment triple data (310). Jouppi further discloses (Fig. 6D) the threshold value is N=3 (310, 312 and 410). See column 7, lines 37-67; column 8, lines 21-28; and column 9, lines 26-37.

It would have been obvious to the person of ordinary skill in the art to use the method of dropping an exceeding fragment data of Jouppi into the graphics processor

of Chen to reduce the amount of time spent rendering the pixels and decreases the memory space for storing the fragment data.

Claim 6.

Jouppi further teaches dropping the fragment data with a no color designation (completely transparency) (Column 15, lines 28-33).

Claim Rejections - 35 USC § 103

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Everitt as applied to claim1 above, and further in view of Duluk, Jr. (6,476,807).

Claim 4.

Chen further discloses (Fig. 1) a display controller (display chip 18) operative to provide the pixel appearance value to a display (20) (Page 1, section 16, lines 14-18).

Chen fails to disclose the back end circuit.

However, Duluk, Jr. teaches the back end circuit is used to provide the interface between the frame buffer and the computer display in a graphics processor system (Column 28, lines 21-32).

It would have been obvious to the person of ordinary skill in the art to use the back end circuit of Duluk, Jr. into the graphics processor of Chen since this is conventional in the art.

Response to Arguments

Applicant's arguments filed July 14, 2005 have been fully considered but they are not persuasive.

Claims 9-13.

Applicant argues on page 2 of the remarks by asserting that Jouppi does not actually disclose or suggest determining an appearance value for the pixel based on the stored fragment data, wherein at least one of the stored fragment data is dropped. The examiner respectfully disagrees.

Jouppi clearly teaches the determining an appearance value for the pixel based on the stored fragment data. This appearance is the color difference or the Z-depth value difference.

"In still yet another aspect, the method selects for discarding the stored fragment value with the color value that produces a numerically smaller color difference than color value of each other stored fragment value when compared to the color value of the new fragment value. Discarding the fragment value that produces the smallest color difference minimizes any noticeable color change for the pixel" (Column 2, line 1-7; and column 10, lines 17-26).

"In still another aspect, the method selects for discarding the stored fragment value with the Z-depth value that is larger than the z-depth value of each other stored fragment value, and replaces that fragment value with the new fragment value. The greater the Z-depth value, the farther the associated fragment is from the viewer of the image" (Column 1, lines 62-67).

Claims 1, 2, 5 and 8.

Chen discloses (Figs. 1 and 2) a graphics processor, comprising:

a rasterizer (rasterizer chip 16) operative to generate fragment data for a pixel to be rendered in response to primitive information (Page 1, section 16, lines 3-7);

a pixel appearance determination circuit (Fig. 2, memory chip 10 having a logic core 50), coupled to the rasterizer (16), for determining which bits are least important to the texture representation and eliminated those bits (Page 3, section 25, lines 9-11).

Chen fails to disclose the dropping the fragment data having the least effect on pixel appearance.

However, Everitt discloses (Figs. 1 and 4) a graphics processor having a rasterization pipeline (400) for determining a pixel appearance value (depth value) based on the fragment data by dropping the fragment data having the least effect on pixel appearance (if the depth values are outside the depth bounds, then the pixel or pixels in the fragment do not need to be rendered and can be discarded) (Page 4, section 32 and 35). Therefore, the discarded pixels in the fragment are itself a small fragment portion of the larger fragment.

Claims 3, 4, 6 and 7.

With respect to claims 3 and 7, note the rebuttal to the Applicant's argument with respect to claim 1 above.

With respect to claim 4, Duluk, Jr. teaches the back end circuit is used to provide the interface between the frame buffer and the computer display in a graphics processor system (Column 28, lines 21-32).

With respect to claim 6, Jouppi further teaches dropping the fragment data with a no color designation (completely transparency) (Column 15, lines 28-33).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUU MATTHEW whose telephone number is (571) 272-7663. The examiner can normally be reached on Flexible Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BELLA MATTHEW can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. Luu

MATTHEW LUU
PRIMARY EXAMINER